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CHEMTRONICS, INC.
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DA-6, DA-7/8, DA-9, DA-10/11, DA-23, AND THE ACID PIT AREA. THE SITE CAN ALSO BE DIVIDED INTO TWO GEOGRAPHICAL SUBSECTIONS; THEY WILL BE REFERRED TO AS THE FRONT VALLEY AND GREGG VALLEY. THE LOCATIONS OF THE 23 DISPOSAL AREAS AND THE TWO VALLEYS ARE SHOWN IN FIGURE 3.

DISPOSAL PRACTICES PRIOR TO 1971 ARE NOT WELL DEFINED. FROM 1952 TO 1971, SOLID WASTE MATERIALS AND POSSIBLY SOLVENTS WERE INCINERATED IN PITS DUG IN THE BURNING GROUND. CHEMICAL WASTES WERE DISPOSED OF IN TRENCHES BESIDES THIS BURNING GROUND. WASTE MATERIALS GENERATED IN THE PRODUCTION OF THE INCAPACITATING, SURETY AGENT, 3-QUINUCLIDINYL BENZILATE (BZ) AND THE TEAR GAS AGENT, O-CHLOROBENZYLIDENE MALONONITRILE (CS), WERE PLACED IN 55 GALLON,RIM-LID DRUMS, REPORTEDLY COVERED WITH DECONTAMINATION "KILL" SOLUTION AND NEUTRALIZED THE BZ AND CS COMPOUNDS. THESE DRUMS WERE DISPOSED OF IN DISPOSAL AREAS DA-6, DA-7/8, AND DA-10/11.

FROM 1971-1975, MOST OF THE LIQUID WASTES GENERATED ON-SITE WENT TO THE BUNCOMBE COUNTY SEWER SYSTEM FOLLOWING SOME FORM OF NEUTRALIZATION AND EQUALIZATION. SMALL VOLUMES WERE DISPOSED OF IN ON-SITE PITS/TRENCHES. SOLID WASTES, ROCKET MOTORS, EXPLOSIVE WASTES, ETC., WERE ALL BURNED IN THE BURNING GROUND. FROM 1975-1979, CHEMTRONICS, INC. CONSTRUCTED PITS/TRENCHES, AS NEEDED, FOR THE DISPOSAL OF SPENT ACID AND VARIOUS ORGANIC WASTES. THESE PITS/TRENCHES WERE CONSTRUCTED IN THE AREA THAT WAS ONCE THE BURNING GROUND, NOW REFERRED TO AS THE ACID PIT AREA.

IN 1980, THE STATE ORDERED CHEMTRONICS TO DISCONTINUE ALL DISCHARGES TO THESE DISPOSAL PITS/TRENCHES. THE PITS HAVE SUBSEQUENTLY BEEN BACK-FILLED. CONSEQUENTLY, IN 1979, CHEMTRONICS INSTALLED A 500,000 GALLON LINED LAGOON FOR BIOTREATMENT OF WASTEWATERS ON TOP OF AN ABANDONED LEACH FIELD FOR THE MAIN PRODUCTION/PROCESSING BUILDING (BUILDING 113). AFTER THE LAGOON WAS FILLED, THE LAGOON LOST ITS CONTENTS DUE TO THE INCOMPATIBILITY OF THE LINER WITH THE BROMINATED WASTE INITIALLY INTRODUCED INTO THE LAGOON. RECONSCTRUCTION OF THE BIOLAGOON, WITH A DIFFERENT LINER, WAS COMPLETED IN AUGUDST 1980 AND WAS IN USE UP TO 1984 AT WHICH TIME THE BIOLAGOON WAS DEACTIVATED. THIS ENTIRE AREA, INCLUDING THE ABANDONED LEACH FIELD AND THE BIOLAGOON, HAS BEEN DESIGNATED AS DA-23.

THE SITE HAS BEEN THE SUBJECT OF TWO PREVIOUS REGION IV, ENVIRNOMENTAL PROTECTION AGENCY (EPA) PLANNED INVESTIGATIONS, AN INVESTIGATION BY THE U.S. ARMY AND AN EMERGENCY RESPONSE ACTION BY REGION IV, EPA. IN JUNE, 1980 GROUNDWATER, SURFACE WATER, SEDIMENT, AND WASTE SAMPLES WERE COLLECTED FOR ANALYSIS. IN APRIL 1984, PRIVATE WATER SUPPLY WELLS IN THE VICINITY OF THE SITE WERE SAMPLED. IN SEPTEMBER 1984, THE US ARMY TOXIC AND HAZARDOUS MATERIALS AGENCY (USATHAMA) COLLECTED SAMPLES FROM TWO DRUMS EXPOSED AT THE SURFACE IN DA-10/11. THESE TWO DRUMS WERE SUSPECTED OF CONTAINING WASTES FROM THE PRODUCTION OF THE CHEMICAL WARFARE AGENT BZ. ALTHOUGH NO BZ WAS FOUND, IN JANUARY 1985, AN IMMEDIATE REMOVAL OF THE SAME TWO EXPOSED DRUMS WAS INITIATED BY EPA DUE TO HEIGHTENED PUBLIC AWARENESS/INVOLVEMENT WITH THE SITE. THE DRUMS WERE SAMPLED AND THEN TRANSPORTED TO GSX, PINEWOOD FACILITY, SOUTH CAROLINA.

#EA

2.0 ENFORCEMENT ANALYSIS

THE CHEMTRONICS SITE WAS INCLUDED ON THE FIRST NPL IN DECEMBER 1982, AND EPA ASSUMED LEAD RESPONSIBILITY FOR THE SITE AT THAT TIME THE SITE HAS BEEN OPERATED AS AN INDUSTRIAL FACILITY SINCE 1952. AN EPA CONTRACTOR COMPLETED A PRP SEARCH IN NOVEMBER 1983. NOTICE LETTERS WERE SENT TO THE SIX IDENTIFIED PRPS. THREE OF THE PRPS WERE FOUND TO BE VIABLE AND EPA INITIATED NEGOTIATIONS WITH THESE THREE PRPS. NEGOTIATIONS BEGAN IN JUNE 1984 AND WERE CONCLUDED IN OCTOBER 1985 WITH TWO OF THE PRPS, CHEMTRONICS, INC. AND NORTHROP CORPORATION, SIGNING AN ADMINISTRATIVE ORDER OF CONSENT TO PERFORM AN RI/PS. THE THIRD PRP, HOECHST CELANESE CORPORATION DECLINED TO PARTICIPATE IN THE RI/PS PROCESS.

NEGOTIATION ON A REMEDIAL DESIGN/REMEDIAL ACTION (RD/RA) WERE INITIATED IN JUNE 1988. DUE TO THE INABILITY OF THE THREE VIABLE PRPS (CHEMTRONICS, INC., HOECHST CELANESE CORPORATION, AND

NORTHROP CORPORATION), THE AGENCY ISSUED THE THREE PRPS AN UNILATERAL ADMINISTRATIVE ORDER. THE EFFECTIVE DATE OF THE ADMINISTRATIVE ORDER WAS MARCH 22, 1989.

#CSS

3.0 CURRENT SITE STATUS

THE SITE IS AN ACTIVE FACILITY WITH THE MAJORITY OF MANUFACTURING ACTIVITIES OCCURRING IN THE FRONT VALLEY. THE PROPERTY IS PRESENTLY BEING LEASED FROM CHEMTRONICS, INC. BY JET RESEARCH, INC., ANOTHER SUBSIDIARY OF THE HALLIBURTON COMPANY.

3.1 HYDROGEOLOCIC SETTING

THE CHEMTRONICS SITE LIES WITHIN THE BLUE RIDGE GEOLOGIC PROVINCE. THE BLUE RIDGE PROVINCE IS PREDOMINANTLY COMPOSED OF ANCIENT IGNEOUS AND METAMORPHIC ROCK. THESE ROCKS HAVE BEEN COMPLEXLY FOLDED AND FAULTED IN A NORTHEASTERLY DIRECTION, PARALLEL TO THE REGIONAL TREND OF THE MOUNTAINS. THESE STRUCTURAL AND METAMORPHIC IMPRINTS ARE REFLECTED IN THE TOPOGRAPHIC AND DRAINAGE PATTERNS WITHIN THE REGION.

THERE ARE NO KNOWN GEOLOGIC FAULTS OR SHEAR ZONES WITHIN TWO MILES OF THE SITE, AND THE BREVARD FAULT ZONE LIES ABOUT SEVEN MILES SOUTH OF THE SITE. THE SITE PROPERTY IS UNDERLAIN ALMOST ENTIRELY BY BIOTITE GNEISS.

IN THE FRONT VALLEY, THE BEDROCK TOPOGRAPHY IS REFLECTED IN THE SURFACE TOPOGRAPHY AND HAS A SHAPE SIMILAR TO AN ELONGATED BOWL OR TROUGH. THE CENTER OF THE BEDROCK TROUGH COINCIDES ROUGHLY WITH THE CENTER OF THE TOPOGRAPHIC VALLEY AND THIS IS WHERE THE OVERBURDEN IS THICKEST (65 TO 90 FEET). BEDROCK ELEVATIONS INCREASE WITH THE SURFACE TOPOGRAPHY AND THE OVERBURDEN DECREASES AS SLOPES STEEPEN. THE THICKENING OF THE OVERBURDEN IN THE VALLEY IS MOST LIKELY DUE TO NATURAL WEATHERING PROCESSES.

IN GREGG VALLEY, THE BEDROCK TOPOGRAPHY IS MORE COMPLEX AND IS NOT ALWAYS REFLECTED BY THE SURFACE TOPOGRAPHY. FOR EXAMPLE, A STEEP BEDROCK SLOPE WAS IDENTIFIED IN THE NORTHEASTERN CORNER OF THE ACID PIT AREA BUT IS NOT REFLECTED BY THE SURFACE TOPOGRAPHY. THERE IS ALSO A BEDROCK TROUGH NEAR THE MIDDLE OF THE ACID PIT AREA WHICH HAS NO SURFACE EXPRESSION. RESHAPING OF THE TOPOGRAPHY BY MAN IN THIS AREA IS MOST LIKELY RESPONSIBLE FOR MASKING THESE BEDROCK FEATURES. ELSEWHERE IN GREGG VALLEY, THE BEDROCK TOPOGRAPHY IS REFLECTED BY THE SURFACE TOPOGRAPHY. AS IN THE FRONT VALLEY, OVERBURDEN IN GREGG VALLEY THICKENS IN ITS CENTRAL AND LOWER PORTIONS.

GROUNDWATER RECHARGE IN THIS AREA IS DERIVED PRIMARILY FROM LOCAL PRECIPITATION. GENERALLY, THE DEPTH OF THE WATER TABLE DEPENDS ON THE TOPOGRAPHY AND ROCK WEATHERING. THE WATER TABLE VARIES FROM THE GROUND SURFACE IN THE VALLEYS (STREAMS) TO MORE THAN 40 FEET BELOW THE GROUND SURFACE IN SHARPLY RISING SLOPES.

THE AQUIFER UNDERLYING THE SITE CAN BE SUBDIVIDED INTO A SURFICIAL ZONE AND A BEDROCK ZONE. THE SURFICIAL ZONE REFERS TO THE OVERLYING SAPROLITE AND THE BEDROCK ZONE INCLUDES THE WEATHERED AND FRACTURED REGION OF THE BEDROCK. THESE TWO ZONES ARE CONSIDERED ONE AQUIFER AS IT WAS DEMONSTRATED IN THE RI THAT THESE ZONES ARE INTERCONNECTED.

THE GROUNDWATER UNDERLYING THE SITE HAS BEEN CLASSIFIED AS CLASS IIB, USING EPA GROUNDWATER CLASSIFICATIONS GUIDELINES OF DECEMBER 1986, SINCE THERE IS POTENTIAL FUTURE USE FOR THIS AQUIFER AS A SOURCE OF DRINKING WATER. THEREFORE, THE GROUNDWATER NEEDS TO BE REMEDIATED TO LEVELS PROTECTIVE OF PUBLIC HEALTH AND WHERE APPROPRIATE, TO LEVELS PROTECTIVE OF THE ENVIRONMENT.

3.2 SITE CONTAMINATION

THE FIELD WORK ASSOCIATED WITH THE RI FOR THE CHEMTRONICS SITE CENTERED ON NUMEROUS KNOWN DISPOSAL AREAS ON-SITE, EIGHT OTHER POSSIBLE AREAS OF CONTAMINATION ON-SITE AND THREE OFF-SITE AREAS THAT REPORTEDLY RECEIVED WASTE MATERIAL FROM THE SITE. SOIL, GROUNDWATER, SURFACE WATER AND SEDIMENT SAMPLES WERE COLLECTED IN AND AROUND THESE AREAS AND INITIALLY ANALYZED FOR THE COMPOUNDS ON THE HAZARDOUS SUBSTANCE LIST (HSL) AS WELL AS OTHER SELECTED COMPOUNDS. AFTER REVIEWING THE ANALYTICAL DATA FROM THE HSL SCANS, INDICATOR PARAMETERS WERE THEN SELECTED TO BE RUN ON SUBSEQUENT SAMPLES AND SAMPLING EPISODES.

THE INDICATOR COMPOUNDS SELECTED WERE

- VOLATILE ORGANIC PRIORITY POLLUTANTS
  - BENZENE
  - 1,2-DICHLOROETHANE
  - -METHYLENE CHLORIDE
  - TETRACHLOROETHENE
  - TOLUENE
  - TRICHLOROETHENE/TRICHLOROETHYLENE
  - TRIHALOMETHANES
    - BROMOFORM
    - CHLOROFORM
- EXPLOSIVES
  - PICRIC ACID
  - RDX
  - TNT
- CHEMICAL AGENTS
  - BZ
  - CS
  - AND THEIR DEGRADATIVE COMPOUNDS
- METALS
  - CHROMIUM
  - NICKEL

THE AGENCY APPROVED THE RI REPORT IN MAY 1987 WHICH DOCUMENTED THE PRESENCE AS WELL AS THE LEVEL AND EXTENT OF CONTAMINANTS ON-SITE. CONTAMINATION WAS FOUND IN THE FOLLOWING MEDIA: SURFACE AND SUBSURFACE SOILS, SURFACE WATER AND SEDIMENT, AND GROUNDWATER. IN OCTOBER 1987, THE PRPS RESAMPLED 12 MONITOR WELLS IN AN ATTEMPT TO VERIFY AND CONFIRM THE LEVELS AND EXTENT OF CONTAMINATION IN THE GROUNDWATER. THE ANALYTICAL DATA INDICATES THAT, TO DATE, NO CONTAMINATION HAS MIGRATED PASS THE SITE'S BOUNDARIES ALTHOUGH PLUMES OF CONTAMINATION IN THE GROUNDWATER HAVE BEEN FOUND EMANATING FROM SEVERAL OF THE DISPOSAL AREAS.

3.3 AIR CONTAMINATION

THE MOST COMMON SOURCE OF AIR CONTAMINATION AT HAZARDOUS WASTE SITES ARE THE VOLATILIZATION OF TOXIC ORGANIC CHEMICALS AND THE SPREAD OF AIRBORNE CONTAMINATED DUST PARTICLES. DURING THE RECENT RI, SITE PERSONNEL USED AN HNU PHOTOIONIZATION ANALYZER AND CYANIDE SENSITIVE COLORISETRIC INDICATOR TUBES TO MONITOR THE AIR WHILE PERFORMING THE DESIGNATED RI TASKS. AN ACTION LEVEL OF 5 PPM WAS ESTABLISHED IN THE CHEMTRONICS PROJECT OPERATIONS PLAN (POP) AND HEALTH 4 SAFETY PLAN. THIS LEVEL WAS ONLY ATTAINED DURING THE EXCAVATION OF THE TEST PITS IN

THE DISPOSAL AREAS. THE 5 PPM ACTION LEVEL WAS SURPASSED ON SEVERAL OCCASIONS WHEN THE HNU WAS PLACED IN THE TEST PIT OR NEAR EXPOSED WASTE MATERIAL UNEARTHED DURING THE EXCAVATION OF THE TEST PITS. NO CYANIDE WAS DETECTED BY THE COLORIMETRIC TUBE.

3.4 SOIL CONTAMINATION

THE STUDY OF THE SOIL, SURFACE AND SUBSURFACE, OCCURRED IN TWO PARTS. THE FIRST TASK ENCOMPASSED THE EXCAVATION OF TEST PITS IN THE MAJORITY OF THE KNOWN DISPOSAL AREAS AND THE SECOND TASK CENTERED ON THE COLLECTION OF SURFACE AND SUBSURFACE SOIL SAMPLES FROM BORINGS DRILLED IN AND AROUND THE DISPOSAL AREAS. THESE ACTIVITIES NOT ONLY ALLOWED THE DETERMINATION OF THE DEPTH OF THE DISPOSED WASTES BUT ALSO PROVIDED DATA TO DETERMINE THE EXTENT, VERTICALLY AND HORIZONTALLY, THAT THE CONTAMINANTS HAVE MIGRATED IN THE SOIL. THE THREE DISPOSAL AREAS WHERE TEST PITS WERE NOT EXCAVATED WERE IN DA-9, DA-23 AND THE ACID PIT AREA.

3.4.1 SOIL CONTAMINATION IN THE FRONT VALLEY

THE FRONT VALLEY CONTAINS TWO DISPOSAL AREAS, DA-10/11 AND DA-23, WHERE SURFACE AND SUBSURFACE SOIL SAMPLES WERE COLLECTED AND ANALYZED. BELOW BRIEFLY DESCRIBES THE CONTAMINANTS PRESENT IN EACH DISPOSAL AREA.

DA- 10/IL

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

DA-23

THE ANALYTES DETECTED IN AND AROUND DA-23 INCLUDED VOLATILE ORGANIC PRIORITY POLLUTANTS, EXPLOSIVES, CS, BZ, AND THEIR DEGRADATIVE PRODUCTS, TOTAL ORGANIC HALIDES, AND TOTAL CYANIDE. THE SAMPLING LOCATIONS ARE SHOWN IN FIGURE 4. THE ANALYTES FOUND ARE LISTED IN TABLE 1 ALONG WITH THE MAXIMUM CONCENTRATIONS. TABLE 1 ALSO IDENTIFIES WHERE THE CONTAMINANTS WERE FOUND AS WELL AS THE FREQUENCY OF THEIR OCCURRENCE AMONG BOTH ON-SITE AND OFF-SITE SAMPLES.

3.4.2 SOIL CONTAMINATION IN GREGG VALLEY

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

3.5 GROUNDWATER CONTAMINATION

ALL MONITOR WELLS WERE SAMPLED IN JUNE 1986 AS PART OF THE RI. TWELVE (12) OF THESE WELLS WERE RESAMPLED IN OCTOBER 1987 IN AN ATTEMPT TO VERIFY CONCENTRATIONS.

3.5.1 GROUNDWATER CONTAMINATION IN THE FRONT VALLEY

GROUNDWATER CONTAMINATION IN THE SURFICIAL ZONE OF THE FRONT VALLEY EXISTS PRIMARILY IN THE AREA DOWNGRADIENT OF DA-23, THE OLD LEACH FIELD FOR BUILDING 113 AND THE BIOLAGOON. OTHER PORTIONS OF THE AQUIFER IN THIS VALLEY ALSO APPEAR TO HAVE BEEN ADVERSELY AFFECTED BUT THE SOURCE OF CONTAMINATION IN THESE AREAS CANNOT BE CLEARLY DEFINED. IN EACH OF THESE LOCATIONS, VOLATILE ORGANIC PRIORITY POLLUTANTS ARE PRESENT.

THE HIGHEST CONCENTRATIONS OF VOLATILE ORGANICS IN THE GROUNDWATER WERE DETECTED IN MONITOR WELLS DOWNGRADIENT OF DA-23 AS SHOWN IN FIGURE 5 AND TABULATED IN TABLE 2. CONCENTRATIONS OF 1-2-DICHLOROETHANE RANGE FROM 0.15 TO 7.4 SG/L. IN THIS AREA, HIGHER CONCENTRATIONS OF VOLATILES WERE ALSO DETECTED IN THE DEEPER PORTION OF THE AQUIFER, INDICATING DOWNWARD AS WELL AS LATERAL MIGRATION OF THE CONTAMINANTS. 1,2-DICHLOROETHANE WAS ALSO DETECTED IN STREAM SAMPLE

RW-7 (FIGURE 5) INDICATING THAT THIS COMPOUND IS DISCHARGING WITH GROUNDWATER IN THIS VICINITY INTO THE NORTHERN TRIBUTARY OF THE UNNAMED BRANCH.

LOWER CONCENTRATIONS OF TWO OTHER VOLATILE ORGANIC COMPOUNDS WERE ALSO DETECTED IN THIS AREA, SPECIFICALLY, 0.11 MG/L OF CHLOROFORM IN MONITOR WELL (MW) SN-4 AND 0.013 MG/L OF TRANS-1,2-DICHLOROETHENE IN MW M85L-4.

BENZYLIC ACID, A DEGRADATIVE COMPOUND OF BZ, WAS DETECTED IN SW-4 AT 470 MG/L (FIGURE 6). THIS IMPLIES THAT BZ DERIVATIVES HAVE MIGRATED DOWNGRADIENT WITH THE GROUNDWATER FROM THE BUILDING 113 LEACH FIELD. RDX AND PICRIC ACID WERE ALSO DETECTED IN THE GROUNDWATER DOWNGRADIENT OF DA-23. A CONCENTRATION OF 0.046 MG/L OF RDX IN MW SW-6, WHICH IS LOCATED UPGRADIENT TO DA-23, MAY INDICATE THAT THIS WELL IS LOCATED NEAR THE ABANDONED TILE DRAINAGE LINE LEADING FROM BUILDING 113 TO THE LEACH FIELD OR WITHIN THE UPPER BOUNDARY OF THE LEACH FIELD ITSELF. A LOW CONCENTRATION OF BIS-(2-ETHYLHEXYL) PHTHALATE WAS ALSO DETECTED IN MW SW-6 (FIGURE 6).

GROUNDWATER IN THE VICINITY OF MW SW-5, ON THE SOUTHWESTERN SIDE OF THE UNNAMED BRANCH, HAS ALSO BEEN ADVERSELY AFFECTED (FIGURES 5 AND 6). CONTAMINANTS IN THIS AREA INCLUDE TRICHLOROETHENE, RDX AND TRANS 1,2-DICHLOROETHANE. ACCORDING TO GROUNDWATER FLOW PATTERNS IN THE AREA, IT IS UNLIKELY THAT THESE CONTAMINANTS ARE COMING FROM DA-23 OR DA-10/11. IT IS FEASIBLE THAT THESE CONTAMINANTS HAVE MIGRATED FROM THE LEACH FIELD OF BUILDING 107 (FIGURE 3) OR ARE A RESULT OF OTHER PAST ACTIVITIES OR INCIDENTS WITHIN THE UPGRADIENT AREA.

LASTLY, 0.17 MG/L OF TRICHLOROETHENE WAS THE ONLY CONTAMINANT DETECTED IN THE FURTHEST DOWNGRADIENT MW M85L-11 (FIGURE 5). IT IS UNLIKELY THAT THIS CONTAMINANT ORIGINATED FROM DA-10/11 SINCE THIS CONTAMINANT WAS NOT FOUND IN EITHER MONITOR WELLS, SW-2 OR SW-3, BOTH OF WHICH ARE IMMEDIATELY DOWNGRADIENT OF DA-10/11. THIS IS FURTHER SUPPORTED BY THE FACT THAT NO TRICHLOROETHENE CONTAMINATION WAS DETECTED IN ANY OF THE SOIL BORINGS SALES COLLECTED FROM THIS AREA. THE ABSENCE OF TRICHLOROETHENE IN GROUNDWATER DOWNGRADIENT OF DA-23 INDICATES THAT THE SOURCE OF TRICHLOROETHENE IN MW M85L-11 IS NOT DA-23 AND IS THEREFORE, MOST LIKELY DUE TO SOME OTHER PAST ACTIVITY OR INCIDENT.

IN SUMMARY, THE EXTENT OF THE GROUNDWATER CONTAMINATION IN THE SURFICIAL ZONE IN THE FRONT VALLEY IS GREATEST DOWNGRADIENT OF DA-23. THE MAJORITY OF CONTAMINANTS FROM THIS AREA ARE MIGRATING WITH THE GROUNDWATER AND DISCHARGING LOCALLY INTO A NORTHERN TRIBUTARY OF THE OF THE UNNAMED BRANCH. GROUNDWATER CONTAMINATION IN OTHER AREAS WITHIN THE VALLEY ARE MOST LIKELY DUE TO THE PRESENCE OF OTHER OLD LEACH FIELDS (SUCH AS THAT OF BUILDING 107) OR OTHER PAST ACTIVITIES. FINALLY, GIVEN THAT NO CONTAMINANTS WERE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM WELLS DOWNGRADIENT OF DA-10/11 DURING THE RI AND ONLY METHYLENE CHLORIDE AT 0.007 MG/L IN THE OCTOBER 1987 SAMPLING EPISODE, IT APPEARS THAT CONTAMINANTS HAVE NOT MOVED FROM THIS AREA.

THE BEDROCK ZONE OF THE AQUIFER IN THE FRONT VALLEY CONTAINS THREE CONTAMINANTS: 1,2-DICHLOROETHANE, BIS (2-ETHYLHEXYL) PHTHALATE, AND CHLOROFORM. THE EXTENT OF THIS CONTAMINATION IS IN THE VICINITY OF TWO WELLS, BW-4 AND BW-5 (FIGURE 5 AND 6). THE CONTAMINANT DETECTED IN MW BW-5 WAS 1,2-DICHLOROETHANE AT A CONCENTRATION OF 0.15 MG/L. THE SOURCE OF THIS CONTAMINANT COULD BE DA-23 IN THAT THIS WELL IS HYDRAULICALLY DOWNGRADIENT FROM THIS DISPOSAL AREA. AN ESSENTIALLY HORIZONTAL FRACTURE IN THE BEDROCK WAS DETECTED IN MW BW-4 THAT COULD PROVIDE A PATHWAY FOR THIS COMPOUND. THIS WOULD EXPLAIN THE APPEARANCE OF THIS CONTAMINANT IN OF MW BW-5 BUT NOT IN MW SW-5, WHICH WAS COMPLETED IN THE SURFICIAL ZONE.

THREE CONTAMINANTS WERE DETECTED IN MW BW-4: 1,2-DICHLOROETHANE, BIS (2-ETHYLHEXYL) PHTHALATE, AND CHLOROFORM. WHILE THE LOW CONCENTRATION OF BIS (2-ETHYLHEXYL) PHTHALATE IS LIKELY THE RESULT OF SAMPLE CONTAMINATION, THE PRESENCE OF 1,2-DICHLOROETHANE AND CHLOROFORM CAN BE DIRECTLY RELATED TO WASTE DISPOSAL IN DA-23.

IN SUMMARY, THE ONLY AREA OF THE BEDROCK ZONE AFFECTED BY DISPOSAL ACTIVITIES IN THE FRONT VALLEY APPEARS TO BE PRIMARILY IN THE VICINITY OF WELLS BW-4 AND BW-5. THIS LEADS TO THE CONCLUSION THAT THE CONTAMINATION OF THE BEDROCK ZONE OF THE AQUIFER IN THIS VALLEY IS OF LIMITED EXTENT AND HAS MIGRATED LESS THAN 800 FEET FROM AREAS OF WASTE DISPOSAL AS EVIDENT BY THE ABSENCE OF CONTAMINANTS IN WELLS BW-6 AND INTERMEDIATE MONITOR WELL #1 (BW-1).

3.5.2 GROUNDWATER CONTAMINATION IN GREGG VALLEY

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

3.6 SURFACE WATER AND SEDIMENT CONTAMINATION

DEFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

3.7 RECEPTORS

THERE HAS BEEN NO CHANGE IN THE IDENTIFIED RECEPTORS BETWEEN NOW AND THE APRIL 5, 1988 CHEMTRONICS ROD.

THE ROUTES OF EXPOSURE EXAMINED IN THE RISK ASSESSMENT WERE:

1) INGESTION OF CONTAMINATED GROUNDWATER, SURFACE WATER AND WILD LIFE;

2) DIRECT CONTACT WITH THE CONTAMINANTS IN THE SOIL, SURFACE WATERS OR GROUNDWATER; AND

3) INHALATION OF VANS OR CONTAMINATED PARTICLES.

THE AQUIFER UNDER THE CHEMTRONICS SITE IS CLASSIFIED AS CLASS IIB, A POTENTIAL SOURCE OF DRINKING WATER, USING THE USEPA GROUNDWATER CLASSIFICATIONS GUIDELINES OF DECEMBER 1986. ALTHOUGH THE SITE AQUIFER IS NOT CURRENTLY USED FOR DRINKING WATER PURPOSES, POTENTIAL (FUTURE) USE WAS INCORPORATED IN THE BASELINE RISK ASSESSMENT. CONSIDERATION OF POTENTIAL GROUNDWATER USE IS CONSISTENT WITH 40 CFR SECTION 300.68(E)(2)(V).

GROUNDWATER, AS NOTED, IS CONTAMINATED ON-SITE. THE GENERAL FLOW OF GROUNDWATER IS TO THE EAST AND WEST TO THE UNNAMED STREAM AND GREGG BRANCH AND EAST TO BEE TREE CREEK, DISCHARGING TO THESE SURFACE WATER FEATURES. GROUNDWATER CONTAMINATION WAS PARTICULARLY NOTED DOWNGRADIENT OF THE ACID PIT AREA AND DA-23. NO DRINKING WATER WELLS EXIST BETWEEN THE SITE AND THE GROUNDWATER DISCHARGE POINTS, THUS A PATHWAY VIA DOMESTIC WELL USAGE DOES NOT EXIST.

CURRENTLY, FUGITIVE DUST PARTICLE GENERATION IS CONSIDERED AN UNLIKELY EVENT. THE MAJORITY OF THE DISPOSAL AREAS ARE CAPPED BY DIRT AND ARE VEGETATED. ONE AREA, ALTHOUGH VEGETATED, HAS NUMEROUS EMPTY DRUMS EXPOSED AT GROUND LEVEL. THIS AREA, DA-9, WAS IDENTIFIED IN THE RI TO HAVE THE GREATEST DEGREE OF RISK TO EXPOSURE TO THE CONTAMINANTS PRESENT. THE CHANCE OF EXPOSURE IS GREATLY REDUCED TO THE REMOTENESS OF THIS DISPOSAL AREA.

CONTAMINATED SOILS WILL CONTINUE TO LEACH TO SURROUNDING SOILS AND GROUNDWATER.

SURFACE RUNOFF FROM SURFACE SOILS MAY CONTAMINATE ADDITIONAL SOILS AND SURFACE WATERS AND SEDIMENTS, ALTHOUGH CONCENTRATIONS WOULD NOT BE EXPECTED TO BE HIGH.

#CC

4.0 CLEANUP CRITERIA

THERE HAS BEEN NO CHANGE IN THE CLEANUP GOALS BETWEEN NOW AND THE APRIL 5, 1988 CHEMTRONICS ROD.

THE EXTENT OF CONTAMINATION WAS DEFINED IN SECTION 3.0, CURRENT SITE STATUS. THIS SECTION EXAMINES THE "APPLICABLE AND RELEVANT OR APPROPRIATE REGULATIONS" (ARARS) ASSOCIATED WITH THE CONTAMINANTS FOUND ON SITE AND THE ENVIRONMENTAL MEDIUM CONTAMINATED. IN THE CASES WHERE NO SPECIFIC ARAR CAN BE IDENTIFIED, A DEFENDABLE MINIMUM GOAL OF REMEDIAL ACTION WILL BE PRESENTED.

4.1 GROUNDWATER REMEDIATION

IN DETERMINING THE DEGREE OF GROUNDWATER CLEAN-UP, SECTION 121(D) OF THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986 (SARA) REQUIRES THAT THE SELECTED REMEDIAL ACTION(S) ESTABLISH A LEVEL OR STANDARD OF CONTROL WHICH COMPLIES WITH ALL

THIS REMEDY IS A COST EFFECTIVE REMEDY WHICH WILL ACHIEVE A LEVEL PROTECTIVE OF HUMAN HEALTH AS WILL AS REMOVE HE THREATS THIS SITE POSES TO THE ENVIRONMENT. THE REMEDY WILL MEET APPROPRIATE REQUIREMENTS, AND IS COST EFFECTIVE. FINALLY, THE REMEDY UTILIZES PERMANENT TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

THE PRESENCE OF SEVERAL CONTAMINATED FOUND ON SITE PRESENTED SOME SPECIAL PROBLEMS WITH RESPECT TO THE ESTABLISHMENT OF TARGET CLEANUP LEVELS. SINCE THESE CHEMICALS EITHER LACK OR HAVE ONLY LIMITED HUMAN HEALTH STANDARDS AND SUPPORTING PHYSIOCHEMICAL AND TOXICOLOGICAL DATA, IT WAS NECESSARY TO DEVELOP PRELIMINARY POLLUTANT LIMIT VALUES (PPLVS) FOR CRITICAL EXPOSURE PATHWAYS, USING ESTIMATES OF ACCEPTABLE DAILY DOSES (DT) AND PARTITION COEFFICIENTS. THE CALCULATIONS AND SUPPORTING REFERENCES FOR THESE PPLVS ARE PRESENTED IN APPENDIX A OF THE FEASIBILITY STUDY.

FOR THOSE CONTAMINANTS FOUND IN THE GROUNDWATER ONSITE TABLE 3 PRESENTS THE LEVELS THE MIGRATION CONTROL REMEDIAL ALTERNATIVE WILL ACHIEVE AT A MINIMUM.

4.2 SOIL REMEDIATION

THE PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENT IN THE RI (CHAPTER 4), DETERMINED THAT RISKS TO HUMAN AS A RESULT OF ENSURE TO ON-SITE CONTAMINANTS VIA INHALATION, INGESTION AND DERMAL CONTACT ARE VERY LOW UNDER PRESENT SITE CONDITIONS. FOR POTENTIAL FUTURE USE SCENARIOS, THE RISK IS SLIGHTLY HIGHER. THEREFORE, REMEDIATION AND INSTITUTIONAL CONTROLS WILL BE NECESSARY TO ASSURE THAT AN INCREASED RISK TO HUMAN HEALTH IS NOT POSED IN THE FUTURE. TABLE 4 PRESENTS REMEDIATION LEVELS THE SOURCE CONTROL REMEDIAL ALTERNATIVE WILL ACHIEVE. THIS INCLUDES PPLVS FOR THESE CONTAMINANTS LACKING PROMULGATED CRITERIA OR STANDARDS.

4.3 SURFACE WATER/SEDIMENT REMEDIATION

THE CONTAMINANT LEVELS IN THE SURFACE WATERS (THE UNNAMED STREAM AND GREGG BRANCH) ARE EXPECTED TO DECLINE WITH THE IMPLEMENTATION OF GROUNDWATER AND SOIL REMEDIATION. THUS, IT WAS CONCLUDED THAT THE REMEDIATION OF SURFACE WATER IS NOT NECESSARY. A BIOMONITORING PROGRAM WILL BE IMPLEMENTED TO DOCUMENT THAT THE REMEDIATION ACTIVITIES DO NOT HAVE AN ADVERSE AFFECT ON THE SURFACE WATERS. THE RI DID NOT IDENTIFY ANY CONTAMINANTS ENTERING BEE TREE CREEK FROM THE SITE.

#AE

5.0 ALTERNATIVES EVALUATED

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

5.1 MODIFICATION OF APRIL 5, 1988 RECORD OF DECISION REMEDIAL ALTERNATIVE FOR DISPOSAL AREA 23

BASED ON A CORRECTION OF ANALYTICAL DATA WITH REGARD TO THE CHEMICAL QUALITY OF THE GROUNDWATER DOWNGRADIENT OF DA-23 IN THE FRONT VALLEY, IT HAS BEEN DEEMED NECESSARY TO CHANGE THE SOURCE CONTROL REMEDY SELECTED FOR DA-23. THE MANDATE TO ADDRESS POST-ROD CHANGES IS PROVIDED BY COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (CERCLA) SS 117(C), WHICH STATES:

"AFTER ADOPTION OF A FINAL REMEDIAL ACTION PLAN (1) IF ANY REMEDIAL ACTION IS TAKEN (UNDER SECTIONS 104 OR 120), (2) IF ANY ENFORCEMENT ACTION UNDER SECTION 106 IS TAKEN, OR (3) IF ANY SETTLEMENT OR CONSENT DECREE UNDER SECTION 106 OR SECTION 122 IS ENTERED INTO, AND IF SUCH ACTION, SETTLEMENT OR DECREE DIFFERS IN ANY SIGNIFICANT RESPECTS FROM THE FINAL PLAN, THE LEAD AGENCY SHALL PUBLISH AN EXPLANATION OF THE SIGNIFICANT DIFFERENCES AND THE REASONS SUCH CHANGES WERE MADE."

5.1.1 CHANGE IN THE RECORD OF DECISION

THE REMEDIAL ACTION SELECTED IN THE CHEMTRONICS APRIL 5, 1988 ROD FOR THE CONTAMINANTS AND CONTAMINATED SOILS ASSOCIATED WITH DA-23 WAS A SOIL FIXATION/STABILIZATION/SOLIDIFICATION (F/S/S) PROCESS FOLLOWED BY CAPPING THE ENTIRE DISPOSAL AREA. THE F/S/S ALTERNATIVE WAS SELECTED DUE TO THE CONCENTRATION LEVEL OF THE NON-VOLATILE ORGANIC CONTAMINANT BENZYLIC ACID AND BENZOPHENONE FOUND IN THE GROUNDWATER DOWNGRADIENT OF DA-23. THE REMEDIAL INVESTIGATION REPORT, DATED APRIL 1987, STATED THAT THE CONCENTRATION FOR BENZYLIC ACID/BENZOPHENONE IN THE GROUNDWATER DOWNGRADIENT OF DA-23 IN MONITOR WELL (MU) SW-4 AS 470 MILLIGRAM/LITER (MG/L). THIS CONCENTRATION IS EQUIVALENT TO 470 PARTS PER MILLION (PPM). MU SW-4 IS A SHALLOW MONITOR WELL AND 470 MG/L IS A RELATIVELY HIGH CONCENTRATION FOR A CONTAMINANT IN GROUNDWATER.

IN OCTOBER 1987, APPROXIMATELY ONE YEAR AFTER THE ORIGINAL SAMPLING EPISODE, NINE (9) MONITOR WELLS WERE RESAMPLED. MW SW-4 WAS ONE OF THESE WELLS. THE ANALYTICAL RESULTS FOR BENZYLIC ACID/BENZOPHENONE FOR SW-4 WAS 1.2 MG/L, WHICH IS CONSIDERABLY LESS THAN THE 470 MG/L LEVEL RECORDED IN THE INITIAL SAMPLING EPISODE. THE CONCENTRATION LEVEL OF 1.2 MG/L IS MORE IN LINE WITH THE LEVELS FOUND IN OTHER WELLS DOWNGRADIENT OF DA-23 AS CAN BE SEEN IN APPENDIX A.

IT WAS THE AGENCY'S RATIONALE, BASED ON THE LEVEL OF 470 MG/L, THAT THE CONCENTRATION OF BENZYLIC ACID/BENZOPHENONE IN THE SOILS OF DA-23, THE SOURCE OF THIS CONTAMINANT, MUST ALSO BE RELATIVELY HIGH, THEREFORE REQUIRING A MORE RIGOROUS SOURCE CONTROL REMEDIAL ACTION. THIS THOUGHT PROCESS LED THE AGENCY TO SELECT A SOIL F/S/S PROCESS AS THE SOURCE CONTROL REMEDIATION FOR DA-23.

THE F/S/S ALTERNATIVE WAS SELECTED OVER SOIL VENTING OR CAPPING DUE TO THE FACT THAT THE CONTAMINANT OF CONCERN, BENZYLIC ACID/BENZOPHENONE, IS NOT READILY VOLATILIZED. ALTHOUGH SOIL VENTING WOULD HELP REMOVE THE VOLATILE ORGANICS FROM THE SOIL, IT WOULD NOT REMOVE THE NON-VOLATILE ORGANICS. USUALLY, IT IS THE NON-VOLATILE ORGANICS THAT DETERMINE THE LENGTH OF TIME NECESSARY TO PUMP AND TREAT THE GROUNDWATER AS NON-VOLATILE ORGANICS DO NOT READILY MOVE WITH GROUNDWATER THROUGH THE SOIL AS DO VOLATILE ORGANICS. SOIL VENTING WOULD HELP REDUCE THE LEVELS OF VOLATILE ORGANICS, BUT IT DOES NOT ADDRESS THE NON-VOLATILE FRACTION OF CONTAMINANTS AND THEREFORE, SOIL VENTING WAS NOT SELECTED AS THE NEW SOURCE CONTROL REMEDIAL ACTION FOR DA-23.

DUE TO THE LOWER LEVEL OF BENZYLIC ACID/BENZOPHENONE THAN FIRST IDENTIFIED AS BEING PRESENT IN THE GROUNDWATER DOWNGRADIENT OF DA-23, AND THE FACT THAT A SOIL VENTING ALTERNATIVE WOULD NOT DECREASE THE TIME NEEDED TO REMEDIATE DA-23, THE AGENCY SELECTED AS THE PREFERRED SOURCE CONTROL REMEDIAL ALTERNATIVE FOR DA-23 TO PLACE A MULTI-LAYER CAP, WHICH INCLUDES A SYNTHETIC LINER, OVER THIS DISPOSAL AREA INSTEAD OF IMPLEMENTING A F/S/S PROCESS TO REMEDIATE THE CONTAMINATED SOILS OF DA-23. THE MULTI-LAYER CAP WILL MEET AS A MINIMUM, THE REQUIREMENTS SPECIFIED UNDER 40 CFR SUBSECTION 264, SUBPARTS R-N. A GAS COLLECTION SYSTEM WILL ALSO BE INCORPORATED INTO THE CAP IF DEEMED NECESSARY.

5.1.3 DOCUMENTATION OF A TRANSCRIPTION ERROR

IN A LETTER DATED SEPTEMBER 19, 1988 (APPENDIX B), THE PRPS INFORMED THE AGENCY OF A POSSIBLE TRANSCRIPTION ERROR MADE BY THE LABORATORY CONTRACTED BY THE PRPS TO PERFORM THEIR ANALYTICAL ANALYSES. INSTEAD OF REPORTING THE DETECTED CONCENTRATION AS 470 MICROGRAMS/LITER (UG/L) OR 470 PARTS PER BILLION (PPB) AS THEY SHOULD HAD DONE, THE LABORATORY REPORTED THE CONCENTRATION AS 470 MG/L OR 470 PPM. MISPLACING THE DECIMAL POINT BY THREE (3) PLACES RESULTED IN A CHANGE OF CONCENTRATION BY A MAGNITUDE OF THREE (3).

THIS INFORMATION AND THE DOCUMENTATION TO SUPPORT THE REPORTED TRANSCRIPTION ERROR WAS TRANSMITTED TO EPA, REGION IV CHIEF OF THE QUALITY ASSURANCE AND LABORATORY EVALUATION SECTION (QALES) OF THE ENVIRONMENTAL SERVICES DIVISION. AFTER REVIEWING THE DOCUMENTATION, QALES CONCURS THAT A TRANSCRIPTION ERROR HAD OCCURRED (APPENDIX C).

5.1.4 CONFIRMATION OF GROUNDWATER QUALITY

PRIOR TO MAKING A FINAL DECISION ON WHETHER TO CHANGE THE SELECTED SOURCE CONTROL REMEDY FOR DA-23, THE AGENCY RESAMPLED MW SW-4 THE FIRST WEEK OF JANUARY 1989. THE ANALYTICAL RESULTS FOR THE JANUARY 1989 SAMPLE ARE 48 UG/L FOR BENZYLIC ACID AND 3400 UG/L FOR BENZOPHENONE. THESE RESULTS CONFIRM THE LOWER CONCENTRATION RANGE OF 0.0 TO 470 UG/L AND NOT CONCENTRATIONS IN THE HUNDREDS OF PARTS PER MILLION. THEREFORE, THE AGENCY ELECTED TO CHANGE THE SOURCE CONTROL REMEDIAL ALTERNATIVE FOR DA-23 FROM SOIL F/S/S TO CAPPING. THE CLEANUP GOAL, AS SPECIFIED IN TABLE 3, FOR BENZYLIC ACID AND BENZOPHENONE ARE THE SAME AS STATED IN THE APRIL 5, 1988 ROD. THE GOALS FOR BENZYLIC ACID AND BENZOPHENONE ARE 21 UG/L AND 152 UG/L, RESPECTIVELY.

CAPPING DA-23 WILL BE AS PROTECTIVE AS WOULD HAVE BEEN A SOIL F/S/S PROCESS OF HUMAN HEALTH AND THE ENVIRONMENT. THIS IS BASED OF THE FINDINGS THAT THE EXPOSURE PATHWAYS FOR THE CONTAMINANTS FOUND AT DA-23 ARE CONSUMPTION OF CONTAMINATED GROUNDWATER AND DISCHARGE OF CONTAMINATED GROUNDWATER TO SURFACE STREAMS. THESE FINDINGS ARE DOCUMENTED IN THE PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENT SECTION OF THE REMEDIAL INVESTIGATION REPORT AND THE ENDANGERMENT ASSESSMENT INCORPORATED INTO THE FEASIBILITY STUDY DOCUMENT. BOTH OF THESE PATHWAYS ARE MITIGATED BY THE GROUNDWATER EXTRACTION/TREATMENT SYSTEM REQUIRED FOR THE FRONT VALLEY UNDER THE MIGRATION CONTROL SECTION OF THE ROD. THEREFORE, IN TERMS OF PROTECTING THE PUBLIC HEALTH AND THE ENVIRONMENT, CAPPING DA-23 AND PUMPING AND TREATING THE GROUNDWATER IN THE FRONT VALLEY OF THE CHEMTRONICS SITE ACHIEVES THE SAME DEGREE OF PROTECTION AS THE SOIL F/S/S PROCESS. AS DOCUMENTED IN THE FEASIBILITY STUDY, CAPPING IS THE MORE COST EFFECTIVE REMEDIAL ACTION. THE NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES HAS BEEN APPRISED AND IS IN COMPLETE AGREEMENT WITH THE AGENCY'S PROPOSAL.

IN ADDITION TO MEETING THE REQUIREMENT OF SUPERFUND, BEING COST EFFECTIVE AND PROTECTING PUBLIC HEALTH AND THE ENVIRONMENT, CAPPING DA-23 WILL ALSO SATISFY THE POST CLOSURE REQUIREMENTS IMPOSED UPON THE OWNER/OPERATOR OF THE FACILITY BY THE RESOURCE, CONSERVATION & RECOVERY ACT (RCRA) PROGRAMS OF THE AGENCY AND NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES. THE RCRA PROGRAMS ARE INVOLVED WITH DA-23 BECAUSE THE BIOLAGOON WAS OPERATED POST-1980.

UNDER RCRA, WHEN A BUSINESS OR INDIVIDUAL STOPS OPERATING A SOLID WASTE MANAGEMENT UNIT (SMU), THE SMU NEEDS TO BE CLOSED OUT ACCORDING RCRA REGULATIONS. CAPPING DA-23 AND PUMPING AND TREATING THE GROUNDWATER WILL MEET RCRA'S REQUIREMENTS.

5.2 NINE POINT EVALUATION CRITERIA FOR EVALUATING REMEDIAL ACTION ALTERNATIVES

EACH ALTERNATIVE WAS EVALUATED USING A NUMBER OF EVALUATION FACTORS. THE REGULATORY BASIS FOR THESE FACTORS COMES FROM THE NATIONAL CONTINGENCY PLAN (NCP) AND SECTION 121 OF SARA. SECTION 121(B) (1) STATES THAT, "REMEDIAL ACTIONS IN WHICH TREATMENT WHICH PERMANENTLY AND SIGNIFICANTLY REDUCES THE VOLUME, TOXICITY OR MOBILITY OF THE HAZARDOUS SUBSTANCES, POLLUTANTS AND CONTAMINANTS AS A PRINCIPAL ELEMENT, ARE TO BE PREFERRED OVER REMEDIAL ACTIONS INVOLVING SUCH TREATMENT. THE OFFSITE TRANSPORT AND DISPOSAL OF HAZARDOUS SUBSTANCES OR CONTAMINATED MATERIALS WITHOUT SUCH TREATMENT SHOULD BE THE LEAST FAVORED ALTERNATIVE REMEDIAL ACT ION WHERE PRACTICABLE TREATMENT TECHNOLOGIES ARE AVAILABLE."

SECTION 121 OF SARA ALSO REQUIRES THAT THE SELECTED REMEDY BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT, COST-EFFECTIVE AND USE PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

BASED ON THE STATUTORY LANGUAGE AND CURRENT US EPA GUIDANCE, THE NINE CRITERIA USED TO EVALUATE THE REMEDIAL ALTERNATIVES LISTED ABOVE WERE:

1. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT ADDRESSES WHETHER OR NOT THE REMEDY PROVIDES ADEQUATE PROTECTION AND DESCRIBES HOW RISKS ARE ELIMINATED, REDUCED OR CONTROLLED THROUGH TREATMENT, ENGINEERING CONTROLS, OR INSTITUTIONAL CONTROLS.

2. COMPLIANCE WITH ARARS ADDRESSES WHETHER OR NOT THE REMEDY WILL MEET ALL OF THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER ENVIRONMENTAL STATUES AND/OR PROVIDE GROUNDS FOR INVOKING A WAVIER.

3. LONG-TERM EFFECTIVENESS AND PERMANENCE REFERS TO THE ABILITY OF A REMEDY TO MAINTAIN RELIABLE PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT OVER TIME ONCE CLEANUP GOALS HAVE BEEN MET.

4. REDUCTION OF TOXICITY, MOBILITY, OR VOLUME IS THE ANTICIPATED PERFORMANCE OF THE TREATMENT TECHNOLOGIES A REMEDY MAY EMPLOY.

5. SHORT-TERM EFFECTIVENESS INVOLVES THE PERIOD OF TIME NEEDED TO ACHIEVE PROTECTION AND ANY ADVERSE IMPACTS ON HUMAN HEALTH AND THE ENVIRONMENT THAT MAY BE POSED DURING THE CONSTRUCTION AND IMPLEMENTATION PERIODS UNTIL CLEANUP GOALS ARE ACHIEVED.

6. IMPLEMENTABILITY IS THE TECHNICAL AND ADMINISTRATIVE FEASIBILITY OF A REMEDY INCLUDING THE AVAILABILITY OF GOODS AND SERVICES NEEDED TO IMPLEMENT THE CHOSEN SOLUTION.

7. COST INCLUDES CAPITAL AND OPERATION AND MAINTENANCE COSTS.

8. SUPPORT AGENCY ACCEPTANCE INDICATES WHETHER, BASED ON ITS REVIEW OF THE RI/PS AND PROPOSED PLAN, THE SUPPORT AGENCY (IDEM) CONCURS, OPPOSES, OR HAS NO COMMENT ON THE PREFERRED ALTERNATIVE.

9. COMMUNITY ACCEPTANCE INDICATES THE PUBLIC SUPPORT OF A GIVEN REMEDY. THIS CRITERIA IS DISCUSSED IN THE RESPONSIVENESS SUMMARY.

5.2.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE CHANGE IN THE SELECTED REMEDIAL ACTION FOR DA-23 WILL BE AS PROTECTIVE AS A F/S/S PROCESS. THE PRIMARY ROUTE OF EXPOSURE IDENTIFIED FOR DA-23 WAS EXPOSURE TO CONTAMINATED SOILS AND INGESTION OF CONTAMINATED GROUNDWATER EMANATING FROM THE DISPOSAL AREA. THE MULTI-LAYER CAP WILL PREVENT PERCOLATION OF RAIN THROUGH THE CONTAMINATED SOILS AND RECHARGING THE UNDERLYING GROUNDWATER WITH THE RESULTING LEACHATE. COUPLED WITH THE MIGRATION CONTROL REMEDIAL ACTION, PUMP AND TREAT GROUNDWATER, THESE TWO REMEDIAL ACTIONS WILL ADEQUATELY PROTECT HUMAN HEALTH AND THE ENVIRONMENT.

5.2.2 COMPLIANCE WITH ARARS

THIS MODIFICATION TO THE APRIL 5, 1988 ROD DOES NOT TRIGGER ANY NEW FEDERAL AND STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS.

5.2.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

THIS MODIFICATION TO THE SOURCE CONTROL REMEDIAL ACTION FOR DA-23 DOES NOT GREATLY IMPACT THE LONG-TERM EFFECTIVENESS AND PERMANENCE OF THE REMEDIATION. THE MULTI-CAP WILL DECREASE THE CONTAMINANT'S MOBILITY AS WELL AS THE RISK OF DIRECT CONTACT.

5.2.4 REDUCTION OF TOXICITY. MOBILITY. OR VOLUME

THE MULTI-LAYER CAP WILL REDUCE THE MOBILITY OF THE CONTAMINANTS AND THE VOLUME OF CONTAMINATED GROUNDWATER BUT DOES NOT ADDRESS THE TOXICITY OF THE CONTAMINANTS.

5.2.5 SHORT-TERM EFFECTIVENESS

DURING THE CONSTRUCTION OF THE MULTI-LAYER CAP, DUST RELEASE MAY OCCUR.

5.2.6 IMPLEMENTABILITY

THERE SHOULD BE NO DIFFICULTY WITH THE DESIGN AND CONSTRUCTION OF A SUITABLE MULTI-LAYER CAP.

5.2.7 COST

CAPITAL COST FOR GROUNDWATER REMEDIATION IS ESTIMATED TO BE $239,000 WITH SYSTEM OFF COST AT $139,500 FOR 30 YEARS, WHICH INCLUDES SAMPLING AND ANALYSIS. THE TOTAL PRESENT WORTH COST OF THE GROUNDWATER REMEDIATION IS $378,500.

CAPPING DISPOSAL AREAS DA-6, DA-7/8, DA-9, DA-10/11, DA-23, AND THE ACID PIT AREA WITH A MULTI-LAYERED CAP IS ESTIMATED TO BE $1,350,000. THE OFF COSTS FOR ALL CAPS IS $362,400. THE ABOVE COSTS INCLUDE ENGINEERING, OVERHEAD, PROFIT, CONTINGENCY, AND ADMINISTRATIVE FEES. THE TOTAL PRESENT WORTH COST IS $1,870,400.

THE PRESENT WORTH COST OF THIS REMEDY, INCLUDING BOTH SOURCE AND MIGRATION CONTROL REMEDIATION IS APPROXIMATELY $2,248,900.

5.2.8 STATE ACCEPTANCE

THE NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES HAS BEEN APPRISED AND IS IN COMPLETE AGREEMENT WITH THE AGENCY'S PROPOSAL AND SINCE IT IS EXPECTED THAT THE RD/RA WILL BE UNDERTAKEN BY THE PRPS, THERE HAS BEEN NO REQUEST MADE UNDER CERCLA, SECTION 104(C) FOR THE STATE TO CONTRIBUTE TEN PERCENT OF ALL COSTS FOR THE REMEDIAL ACTION.

5.2.9 COMMUNITY ACCEPTANCE

EXPLANATION OF SIGNIFICANT DIFFERENCE FACT SHEETS WERE SENT TO ALL THOSE ON THE CHEMTRONICS MAILING LIST INCLUDING THE FOUR INFORMATION REPOSITORIES. A LEGAL PUBLIC NOTICE ANNOUNCING THE PROPOSED AMENDMENT TO THE APRIL 5, 1988 ROD WAS ALSO PUBLISHED IN THE ASHEVILLE TIMERS/CITIZEN NEWSPAPER. THESE WERE THE TWO MECHANISMS EMPLOYED TO NOTIFIED INTERESTED PARTIES, RESIDENTS, MEDIA, AND LOCAL AND STATE OFFICIALS OF AGENCY'S INTENTION TO AMEND THE APRIL 5, 1988 ROD. IN THESE ANNOUNCEMENTS, THE AGENCY ALSO MADE IT KNOWN THAT THE AGENCY WOULD CONDUCT PUBLIC MEETING IN THERE WAS INTEREST IN THE LOCAL COMMUNITY.

THE EXPLANATION OF SIGNIFICANT DIFFERENCE/PROPOSED PLAN FACT SHEET DESCRIBED, IN DETAIL, THE JUSTIFICATION FOR AMENDING THE ROD. THE LEGAL NOTICE BRIEFLY DESCRIBED THE AGENCY'S JUSTIFICATION. BOTH ANNOUNCED THAT THERE WAS A THREE WEEK PUBLIC COMMENT PERIOD ASSOCIATED WITH THE PROPOSED AMENDMENT TO THE ROD AND ENCOURAGED THE PUBLIC TO SUBMIT WRITTEN COMMENTS TO THE AGENCY. THE COMMENT PERIOD ENDED MARCH 21. ONLY ONE COMMENT WAS RECEIVED DURING THIS TIME FRAME. THIS LETTER DEALT WITH SEVERAL OTHER ISSUES SURROUNDING THE CHEMTRONICS SITE AND NOT THE PROPOSED AMENDMENT TO THE APRIL 5, 1988 ROD.

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6.0 RECOMMENDED ALTERNATIVES

6.1 DESCRIPTION OF RECOMMENDED READY

THE RECOMMENDED ALTERNATIVE FOR REMEDIATION OF GROUNDWATER AND SOIL CONTAMINATION AT THE CHEMTRONICS SITE INCLUDES EXTRACTION, TREATMENT AND DISCHARGE OF GROUNDWATER AND CAPPING CONTAMINATED SOILS. THE CAPPED AREAS WILL BE FENCED WITH A CHAIN-LINKED FENCE AND MARKED ACCORDINGLY.

THE WATER AND SEDIMENT IN THE POND ON THE UNNAMED STREAM WILL BE SAMPLED. IF EVIDENCE OF CONTAMINATION IS PRESENT, THE POND WILL BE DRAINED WITH THE WATER BEING SENT THROUGH THE TREATMENT SYSTEM SET UP FOR TREATING GROUNDWATER AND THE SEDIMENT WILL BE TRANSPORTED TO ANOTHER DISPOSAL AREA AND CAPPED ALONG WITH THAT DISPOSAL AREA.

A MONITORING PROGRAM, EMPLOYING BIOASSAYS, WILL BE ESTABLISHED FOR THE SURFACE WATER. MONITORING LOCATIONS WILL BE LOCATED ON THE UNNAMED STREAM, GREGG BRANCH AND BEE TREE CREEK. THE PURPOSE OF THIS MONITORING PROGRAM IS 1) TO INSURE NO ADVERSE IMPACT ON THESE STREAMS DURING IMPLEMENTATION OF THE REMEDIAL ACTION AND 2) TO ESTABLISH A DATA BASE TO USE TO MEASURE THE SUCCESS OF THE REMEDIAL ACTION IMPLEMENTED.

SOILS IN DISPOSAL AREAS DA-6, DA-7/8, DA-9, DA-10/11, DA-23, AND THE ACID PIT AREA WILL BE CAPPED WITH A MULTI-LAYERED CAP WHICH WILL INCLUDE AN INERT SYNTHETIC LINER. WHERE DETERMINED NECESSARY, A VENTING SYSTEM WILL ALSO BE INSTALLED.

A GROUNDWATER EXTRACTION SYSTEM WILL BE INSTALLED IN BOTH THE FRONT VALLEY AND IN GREGG VALLEY. THE EXTRACTED GROUNDWATER WILL EITHER BE TREATED IN EACH VALLEY OR COMBINED AND TREATED THROUGH A SINGLE SYSTEM. THE TREATED GROUNDWATER WILL BE DISCHARGED MEETING ALL ARARS.

THESE RECOMMENDED ALTERNATIVES MEET THE REQUIREMENTS OF THE NCP, 40 CFR SECTION 300.68(J) AND SARA. THIS RECOMMENDED REMEDY PERMANENTLY AND SIGNIFICANTLY REDUCES THE VOLUME OF HAZARDOUS SUBSTANCES IN THE GROUNDWATER, REDUCES THE TOXICITY AND/OR MOBILE OF CONTAMINANTS IN THE SOILS.

6.2 OPERATIONS AND MAINTENANCE

WHEN THE REMEDY IS COMPLETED, LONG-TERM OPERATION AND MAINTENANCE (O&M) WILL BE REQUIRED FOR THE CAPS ALONG WITH LONG-TERM MONITORING OF THE GROUNDWATER. THIS WILL ASSURE THE EFFECTIVENESS AND PERMANENCE OF THE SOURCE CONTROL REMEDIATION AND GROUNDWATER REMEDIES. LONG-TERM O&M WILL ALSO BE REQUIRED FOR MONITORING THE GROUNDWATER EXTRACTION SYSTEMS AND THE GROUNDWATER TREATMENT SYSTEM(S).

6.3 COST OF RECOMMENDED ALTERNATIVE

CAPITAL COST FOR GROUNDWATER REMEDIATION IS ESTIMATED TO BE $239,000 WITH SYSTEM O&M COST AT $139,500 FOR 30 YEARS, WHICH INCLUDES SAMPLING AND ANALYSIS. THE TOTAL PRESENT WORTH COST OF THE GROUNDWATER REMEDIATION IS $378,500.

CAPPING DISPOSAL AREAS DA-6, DA-7/8, DA-9, DA-10/11, DA-23, AND THE ACID PIT AREA WITH A MULTI-LAYERED CAP IS ESTIMATED TO BE $1,350,000. THE O&M COSTS FOR ALL CAPS IS $362,400. THE ABOVE COSTS INCLUDE ENGINEERING, OVERHEAD, PROFIT, CONTINGENCY, AND ADMINISTRATIVE FEES. THE TOTAL PRESENT WORTH COST IS $1,870,400.

THE PRESENT WORTH COST OF THIS REMEDY, INCLUDING BOTH SOURCE AND MIGRATION CONTROL REMEDIATION IS APPROXIMATELY $2,248,900.

6.4 SCHEDULE

THE PLANNED SCHEDULE FOR REMEDIAL ACTIVITIES AT THE CHEMTRONICS SITE IS EXPECTED TO BE GOVERNED BY A CONSENT DECREE TO BE SIGNED BY THE PRPS, BUT TENTATIVELY IS AS FOLLOWS:

APRIL 1988 - APPROVE RECORD OF DECISION
APRIL 1989 - AMEND APRIL 5, 1988 ROD
MAY 1989 - BEGIN REMEDIAL DESIGN
OCTOBER 1989 - COMPLETE REMEDIAL DESIGN AND MOBILIZE

6.5 FUTURE ACTIONS

FOLLOWING COMPLETION OF REMEDIAL ACTIVITIES, LONG-TERM GROUNDWATER MONITORING WILL BE REQUIRED TO ASSURE EFFECTIVENESS OF THE GROUNDWATER CLEANUP AND SOURCE CONTROL REMEDIATION. MAINTENANCE OF THE CAPS ON DISPOSAL AREAS DA-6, DA-7/8, DA-9, DA-10/11, DA-23, AND THE ACID PIT AREA. ACTION LEVELS FOR CONTAMINANTS IN THE GROUNDWATER WILL BE SET WITH THE STATE OF NORTH CAROLINA'S CONCURRENCE. IF THESE LEVELS ARE REACHED DURING ANY SAMPLING EPISODE AFTER THE REMEDIAL ACTIVITIES ACHIEVE GOAL, THIS WILL TRIGGER AN IMMEDIATE PERMANENT REMEDIATION OF THE DISPOSAL AREA RESPONSIBLE FOR THIS LEVEL OF CONTAMINATION IS REACHED DOWNGRADIENT OF THAT DISPOSAL AREA. THE ACTION LEVELS EXPECTED TO BE IMPLEMENTED ARE MCLS AND PPLVS.

6.6 CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988.

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7.0 COMMUNITY RELATIONS

REFER TO THE CHEMTRONICS ROD DATED APRIL 5, 1988 FOR SUMMARIZATION OF PREVIOUS COMMUNITY RELATIONS ACTIVITIES.

EXPLANATION OF SIGNIFICANT DIFFERENCE FACT SHEETS (APPENDIX D) WERE SENT TO ALL THOSE ON THE

CHEMTRONICS MAILING LIST INCLUDING THE FOUR INFORMATION REPOSITORIES. A LEGAL PUBLIC NOTICE (APPENDIX E) ANNOUNCING THE PROPOSED AMENDMENT TO THE APRIL 5, 1988 ROD WAS ALSO PUBLISHED IN THE ASHEVILLE TIMERS/CITIZEN NEWSPAPER. THESE WERE THE TWO MECHANISMS EMPLOYED TO NOTIFIED INTERESTED PARTIES, RESIDENTS, MEDIA, AND LOCAL AND STATE OFFICIALS OF THE AGENCY'S INTENTION TO AMEND THE APRIL 5, 1988 ROD. IN THESE ANNOUNCEMENTS, THE AGENCY ALSO MADE IT KNOWN THAT THE AGENCY WOULD CONDUCT PUBLIC MEETING IN THERE WAS INTEREST IN THE LOCAL COMMUNITY.

THE EXPLANATION OF SIGNIFICANT DIFFERENCE/PROPOSED PLAN FACT SHEET DESCRIBED, IN DETAIL, THE JUSTIFICATION FOR AMENDING THE ROD. THE LEGAL NOTICE BRIEFLY DESCRIBED THE AGENCY'S JUSTIFICATION. BOTH ANNOUNCED THAT THERE WAS A THREE WEEK PUBLIC COMMENT PERIOD ASSOCIATED WITH THE PROPOSED AMENDMENT TO THE ROD AND ENCOURAGED THE PUBLIC TO SUBMIT WRITTEN COMMENTS TO THE AGENCY. THE COMMENT PERIOD ENDED MARCH 21. ONLY ONE COMMENT WAS RECEIVED DURING THIS TIME FRAME. THIS COMMENT AND THE AGENCY'S RESPONSE CAN BE FOUND IN APPENDIX F.

THE FOUR INFORMATION REPOSITORIES ARE LOCATED AT:

BUNCOMBE COUNTY EMERGENCY SERVICES
P.O. BOX 7601
ASHEVILLE, NC 28807
CONTACT: MR. JERRY VEHAUN

CHEMTRONICS SITE INFORMATION BUREAU
70 WOODFIN PLACE
ASHEVILLE, NC 28814

UNIVERSITY OF NORTH CAROLINA AT ASHEVILLE
ONE UNIVERSITY HEIGHTS
ASHEVILLE, NC 28804-3299
CONTACT: DR. GARY MILLER

WARREN WILSON COLLEGE LIBRARY
WARREN WILSON COLLEGE
701 WARREN WILSON COLLEGE ROAD
SWANNANOA, NC 28778
CONTACT: MS. LAURA TEMPLE-HANEY

THE ADMINISTRATIVE RECORD IS LOCATE AT WARREN WILSON COLLEGE'S LIBRARY.

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8.0 STATE INVOLVEMENT

THE NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES HAS BEEN APPRISED AND IS IN COMPLETE AGREEMENT WITH THE AGENCY'S PROPOSAL AND SINCE IT IS EXPECTED THAT THE RD/RA WILL BE UNDERTAKEN BY THE PRPS, THERE HAS BEEN NO REQUEST MADE UNDER CERCLA, SECTION 104(C) FOR THE STATE TO CONTRIBUTE TEN PERCENT OF ALL COSTS FOR THE REMEDIAL ACTION.

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TABLES, ATTACHMENT

TABLE 1
CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL, AREA 23

COMPOUND DETECTED	MAXIMUM DETECTED CONCEN-TRATION (MG/KG)	LOCATION OF MAXIMUM DETECTED CONCEN-TRATION	BORING INTERVAL SAMPLE DEPTH (FT)	% OF SAMPLES ANALYZED IN WHICH COMPOUND WAS DETECTED ON-SITE	OFF-SITE
VOLATILE ORGANIC PRIORITY POLLUTANTS(1)					
TOLUENE	0.014	DA 23-2	#2 (10-12)	25	0
METHYLENE CHLORIDE	0.140	DA 23-4	#2 (45-85)	100	100
1,2-DICHLORO-ETHANE	2.70	DA 23-2	#2 (25-27)	100	29
CHLOROFORM	0.011	DA 23-2	#2 (10-12)	25	0
ETHYL BENZENE, TETRACHLORO-ETHANE	0.01	DA 23-2	#2 (10-12)	25	0
EXPLOSIVES(2)					
TNT	0.6	DA 23-2	#1 (5-9)	50	N/A
	0.5	DA 23-2	#2 (10-12)		
CS, BZ & DEGRADATION PRODUCTS TOTAL ORGANIC HALIDES(2)					
BENZYLIC ACID/ BENZOPHENONE	9.0	DA 23-2	#1 (5-9)		
	3.6	DA 23-2	#2 (10-12)	75	6
	1.9	DA 23-2	#2 (10-12)		
TOTAL ORGANIC HALIDES(2)	11.0	DA 23-4	#3 (15-19) (20-22)	25	N/A
TOTAL CYANIDE (2)	0.18	DA 23-4	#1 (0-2)	25	24
	0.58	DA 23-4	#2 (4.5-8.5)		

DA = DISPOSAL AREA
N/A = NOT ANALYZED

		ON-SITE	OFF-SITE
(1)	NUMBER OF LOCATIONS SAMPLED	4	3
	NUMBER OF SAMPLES COLLECTED	4	30
	NUMBER OF SAMPLES ANALYZED	4	17

		ON-SITE	OFF-SITE
(2)	NUMBER OF LOCATIONS SAMPLED	1	3
	NUMBER OF SAMPLES COLLECTED	4	30
	NUMBER OF SAMPLES ANALYZED	4	17

TABLE NO. 3
GROUNDWATER REMEDIATION LEVELS AND CITED REFERENCES

COMPOUND	REMEDIATION LEVEL MG/L	SOURCE
1,2-DICHLOROETHANE	0.005	MCL
TRICHLOROETHYLENE	0.005	MCL
METHYLENE CHLORIDE	0.06	PSD
TRANS-1,2-DICHLOROETHYLENE	0.07	PMCLG
BENZENE	0.005	MCL
CHLOROFORM	0.1	MCL(TTHM)
ETHYLBENZENE	0.68	PMCLG
TETRACHLOROETHYLENE	0.007	RSD
BROMOFORM	0.1	MCL(TTHM)
CARBON TETRACHLORIDE	0.005	MCL
TOLUENE	2.0	PMCLG
PICRIC ACID	14.0	PPLG
RDX	0.035	USAIWQC
TNT	0.044	PPLV
TOTAL CYANIDES	0.200	RFD
LEAD	0.05	MCL
CHROMIUM	0.05	MCL
NICKEL	0.5	RFD
COPPER	1	MCL
ZINC	5	WQC
BENZILIC ACID	0.021	PPLV
BENZOPHENONE	0.152	PPLV

MCL - MAXIMUM CONTAINMENT LEVEL.

MCL(TTHM) - THE MCL FOR TOTAL TRIHALOMETHANES (SUM OF ALL CONCENTRATIONS) IS 0.1 MG/1. TTHM'S INCLUDE CHLOROFORM, BROMOFORM, BROMODICHLOROMETHANE, AND CHLORODIBROMOMETHANE.

PMCLG - PROPOSED MAXIMUM CONTAINMENT LEVEL GOAL 50 FR 46936-47022 (NOVEMBER 13, 1985).

PPLV - PRELIMINARY POLLUTANT LIMIT VALUE (SEE APPENDIX A).

RFD - REFERENCE DOSE 52 FR 29992-29997 (AUGUST 12, 1987).

RSD - RISK SPECIFIC DOSE, 51 FR 21648-21693.

USAIWQC - US ARMY WATER QUALITY CRITERIA. THE GIVEN VALUES HAVE BEEN APPROVED BY THE ARMY SURGEON GENERAL

WQC - CLEAN WATER ACT, WATER QUALITY CRITERIA FOR HUMAN HEALTH
- ADJUSTED FOR DRINKING WATER ONLY, (GOLD BOOK).

FROM TLV - CALCULATED FROM A THRESHOLD LIMIT VALUE, BASED ON A 70 KG PERSON WHO DRINKS 2 LITERS OF WATER PER DAY. A SAFETY FACTOR OF 100 HAS ALSO BEEN APPLIED.

TABLE 4
SOIL REMEDIATION LEVELS FOR CONTAMINANTS LACKING PROMULGATED CRITERIA OR STANDARDS

CONTAMINANT GROUP	SOIL STANDARD (MG/KG)	SOURCE
PCBS	10	TSCA
3-QUINUCLIDINOL	25.7	PPLV
BENZILIC ACID	9.3	PPLV
BENZOPHENONE	9.3	PPLV
CS (2-CHLOROBENZALMALONONITRILE)	43.3	PPLV
MALONONITRILE	N/A+	PPLV
O-CHLOROBENZALDEHYDE	0.31	PPLV
TNT	305	PPLV
RDX	95	PPLV
PICRATE/PICRIC ACID	38,000	PPLV

+ - MALONONITRILE WOULD NOT PERSIST IN SOIL BASED UPON KD PARTITION COEFFICIENT